Master of Science
Biomedical and Health Sciences

Melbourne Medical School
Faculty of Medicine, Dentistry & Health Sciences
MC-SCIBHS (R05-RH)

Information Guide
for Students and Staff
2011

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Welcome from Lea Delbridge,  
MSc (BHS) Stream Coordinator

Welcome to The Master of Science - Biomedical & Health Sciences. This program has been created to offer graduates a new pathway into a research or other science based career and/or PhD studies. The MSc(BHS) is an alternative to the Honours undergraduate year, in providing a pathway to the PhD. Students undertake a research project and discipline-specific coursework subjects. In addition, a range of professional business and communication subjects are offered to complement and enhance research and progress career opportunities. The MSc (BHS) provides an understanding of the research process, specialist knowledge and professional skills that are attractive to employers. Normally this is a 2 year full-time course (200 points), although part-time enrolment may be possible. Mid-year course entry may be possible depending on supervisory arrangements.

Students must complete a research project under the supervision of a staff member in an academic unit (a Department or an affiliated Institute) of the Melbourne Medical School within the Faculty of Medicine, Dentistry and Health Sciences. Depending on supervisor and project availability, research is undertaken in a range of locations including:

- Anatomy and Cell Biology
- Biochemistry & Molecular Biology (Bio21)
- Medicine (Royal Melbourne Hospital/Western Hospital and St Vincent's Hospital)
- Microbiology and Immunology
- Neurosciences (Centre for Neurosciences/Florey Institute)
- Otolaryngology (Hearing Sciences)
- Ophthalmology (Eye Research)
- Paediatrics (Murdoch Children’s Research Institute)
- Pharmacology
- Physiology
- Radiology
- Surgery (Austin Hospital, Royal Melbourne Hospital/Western Hospital & St Vincent’s Hospital)

MSc(BHS) students are scattered across preclinical and clinical locations in the Faculty, and interact extensively with other research student groups in their host departments or academic units. Students frequently participate in coursework activities with Honours and other MSc cohorts. The assessment of MSc(BHS) research projects is managed at a local Departmental or academic unit level - with academic and administrative oversight through the Melbourne Graduate School of Science. The opportunities to interact with a range of students and academics in a variety of settings offers BSc(BHS) students a rich cohort and mentoring experience.

MSc(BHS) students are important and much valued members of our School and Faculty. I hope that your time with us is rewarding and enjoyable and wish you all the best with your studies.

Professor Lea M D Delbridge  
Department of Physiology
**MSc (BHS) Course Structure**


Students undertaking the Master of Science (Biomedical and Health Sciences program) must complete 200 points comprising a Research Project (normally 125 points), a selection of Discipline Subjects (normally 4 x 12.5 point subjects) and a selection of Professional Tools Subjects (normally 2 x 12.5 point subjects). An option to complete a 75 point project is available, usually appropriate only for students transferring institutions/courses and requiring credit point transfers. In such instances the Discipline and Professional Tools subject selection rules are modified (see Course Structure details at https://handbook.unimelb.edu.au/view/2011/R05-RH#structureId). All subject selections are entered by students through the Integrated Student Information System (ISIS) via the Student Portal in the usual way.

**Research Project Subjects & Assessment Components**


Students entering the BSc(BHS) stream are expected to have organised an academic supervisor in the school, department or affiliated institute as part of the application process. The theme and scope of the research project is negotiated between the Student and Supervisor at the time of application lodgement and enrolment. A specific Supervisor is identified in the application.

A Research Project Report is to be submitted for examination at the conclusion of the project (see details below) and other related assessment hurdle requirements are to be satisfied as the Project progresses. Subject to supervisor approval, students will enrol in a combination of research project subjects as indicated below, to ensure they have completed the required total of research project points by the end of their course. The points allocated to the research project for any particular semester will be adjusted to accommodate the Discipline and Professional Tools subjects undertaken concurrently so that the total point load is appropriate (ie 50 points per semester full time or pro-rata equivalent part time). Available subject codes are shown below (older code numbers apply pre-2010). It is possible to enrol in the same subject code more than once if this is required to achieve the appropriate point loading in different semesters.

BIOM90001 (510-671) Project in Biomedical & Health Sciences – 12.5 points
BIOM90003 (510-672) Project in Biomedical & Health Sciences – 25.0 points
BIOM90004 (510-673) Project in Biomedical & Health Sciences – 37.5 points
BIOM90005 (510-675) Project in Biomedical & Health Sciences – 50 points

**Assessment components (for Full-time enrolment)**

- A major research report of up to 15,000 words, due towards the end of the final semester (100%)
- A literature review of up to 4,000 words, due toward the end of the second semester (hurdle)
- Two 20 minute oral presentations, due towards the end of the second and final semesters (hurdle).

Satisfactory performance is required for the completion of ‘hurdle’ components. If necessary this may involve re-submission or re-presentation. For the literature review and the research report, Departments or academic units will provide guidance regarding format and convention according to research discipline specific requirements and local practice. Assessment processes and criteria are detailed below.
Discipline Subjects

For BSc(BHS) students, the Discipline subject 'Introduction to Biomedical Research' (BIOM40001) is specified as a co-requisite subject, usually to be undertaken in the first semester of enrolment. See https://handbook.unimelb.edu.au/view/2011/BIOM40001

This subject is held during a 2 week intensive period in the last 2 weeks of February and provides training in key areas of importance in biomedical and health sciences research (experimental design and analysis, hypothesis testing and data presentation, ethics and integrity). The scheduling of this subject early in the academic year provides flexibility to allow additional subject selections in Semester 1 and concentrates teaching activity to maximize time available for research project focus. The timetable for 'Introduction to Biomedical Research' is also arranged to allow students to attend additional sessions organized by their host Departments or academic units relating to environmental health and safety induction. In some circumstances, Supervisors and Students may make a case to have this co-requisite subject waived in favour of an alternative discipline specific option.

Students should select other Discipline subjects (3 additional subjects over the two year period) in consultation with their Supervisors, taking into account relevance to research project, timetable feasibility, Semester availability and personal interest. Students may select approved subjects relevant to the proposed research project from those within the Master of Science programs, in particular from the:


Some Departments or academic units offer 40000 or 90000 series subjects specifically designed for MSc and Honours students to take in parallel. Discipline subjects may also be selected from undergraduate 3rd year subjects in a relevant area of interest - a maximum of two discipline subjects may be taken at this level.

Professional Tools Subjects

Students undertaking a 125 point research project will complete 25 points (ie 2 subjects) from the following list of currently available Professional Tools subjects (older code numbers apply pre 2010):

- SCIE90007 (615-668) e-Science
- SCIE90005 (600-618) Ethics and Responsibility in Science
- BUSA90403 (600-614) Business Tools: Money, People & Projects
- BUA90471 Business Tools: The Market Environment
- SCIE90006 (600-619) Scientists, Communication and the Workplace
- SCIE90004 (600-616) Science in Context
- MAST90045 (600-617) Systems Modeling and Simulation
- MAST90044 (600-615) Thinking and Reasoning with Data
- MULT90012 Industry Project in Science
- SKIL90004 Project Management in Science

Semester availability of Professional Tools subjects varies, and new subjects may become available as students progress through their course.
Course Planning: mixing and matching Subject components over 2 years

With their Supervisor, each student builds a customized plan for their MSc(BHS), putting together the best sequence and balance of components to suit their goals. Depending on the character of their Project, the emphasis on allocation of Project points and the timing of other subjects may vary. For all students, the completion of the Discipline Subject ‘Introduction to Biomedical Research’ (BIOM40001) or an equivalent is required in the first Semester of study. Some examples of course structure are shown below (for a fulltime 2 year enrolment). It is not necessary to lock in a plan for the full course at the start - subject selections are made semester by semester. However, it is a good idea to look ahead and consider some possible options early in the course.

**FIRST YEAR**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
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</thead>
<tbody>
<tr>
<td>Project 25</td>
<td>Project 37.5</td>
</tr>
<tr>
<td>BIOM40001</td>
<td>DISC Selective</td>
</tr>
<tr>
<td>DISC Selective</td>
<td>PT Selective</td>
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</table>

*Three components evenly balanced over two years*

**SECOND YEAR**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
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<tbody>
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</tr>
<tr>
<td>DISC Selective</td>
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</tr>
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</table>

*Early Discipline subject grounding, Project progressively building*

<table>
<thead>
<tr>
<th>Semester 1</th>
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<tr>
<td>DISC Selective</td>
<td>PT Selective</td>
</tr>
</tbody>
</table>

*Initial Project focus, ongoing maintenance, delayed Professional Tools*

| Research Project Total = 125 points |
| Discipline Subjects 4 x 12.5 = 50 points |
| Professional Tools Subjects 2 x 12.5 = 25 points |
Obtaining credit for prior study (‘Advanced Standing’)

Students who wish to enter the MSc(BHS), may apply for up to 50 points 'credit' for subjects undertaken in a related course which might be considered to have equivalence in the MSc(BHS). This is a process which is described as obtaining 'Advanced Standing' for prior learning. Details can be found at:

http://graduate.science.unimelb.edu.au/students/credit.php

The application for 'Advanced standing' in relation to specific subjects is made at the time of application for admission to the Course. Usually student advisors and supervisors are able to provide guidance about subjects which are likely to qualify. Advanced standing is requested for specific subjects of the Discipline, Professional Tools or Project type and a case is made for each subject. The subjects must be approved by the Supervisor as relevant to the area of the research project. Since a number of MSc streams share access to the same subjects, this can be quite straightforward in many instances for students moving between MSc courses at the University of Melbourne. In negotiating 'Advanced Standing', the Course requirements must be satisfied for MSc(BHS) - 4 Discipline subjects (including BIOM40001) and 2 Professional Tools subjects.

MSc (BHS) Academic Organization and Student Support

MSC(BHS) students are assisted in many ways at many levels to successfully complete their studies at the University of Melbourne.

Student host Departments or academic units have primary responsibility to provide support and guidance for students. The supervisor is the student's key academic contact, and Departments or academic units are required to ensure appropriate supervisory standards and continuity.

Departments or academic units may take different coordination approaches in relation to supporting MSc(BHS) students - in some instances there may be a dedicated MSc(BHS) Coordinator, and in other settings this may be a role taken on by the Graduate Coordinator who has broad responsibility for all graduate students. In other situations, because MSC(BHS) students engage in various activities in parallel with Honours students, the Honours Coordinators may have joint MSc(BHS) responsibility. Whatever the arrangement, a responsible Department or academic unit MSc(BHS) Coordinator should be identified to the Melbourne Graduate School of Science. These academics have a special role to play assisting supervisors to provide appropriate resources to students, working with students in making appropriate subject choices and managing the project assessment activities.

The Biomedical & Health Sciences Stream Coordinator has responsibility for ensuring that the protocols approved by the Academic Programs Committee (in the context of Academic Board policy) and which apply to Master of Science coursework and research programs are implemented. This includes appointing Examiners for the Report (based on nominations provided, see below), resolving examiner discrepancies, maintaining records of Report grades awarded, retaining a collection of exemplar theses for benchmarking purposes, providing operational guidelines for stream management and assessment implementation, and assisting Departments or academic units and local Coordinators when difficulties arise.

The Melbourne Graduate School of Science located Level 1, David Caro Physics Building, http://graduate.science.unimelb.edu.au/contact.php (graduate-science@unimelb.edu.au) provides support for the MSc(BHS) students managing the receipt and assessment of applications, facilitating the initial enrolment of students and assisting with any ongoing enrolment matters. The MGSS also offers a schedule of orientation events for new students in February each year. The MDHS Student Centre
(Brownless Library, Level 1, mdhs-sc@unimelb.edu.au) provides ongoing assistance to students and to Coordinators with assessment results and other administrative matters. For students, when queries arise that in the first instance cannot be dealt with by their Supervisor or local Department Coordinator, the first point of contact should be the MGSS, by email or 'over the counter' (http://graduate.science.unimelb.edu.au/contact.php).

Finally, for students and supervisors seeking some more specific support at an academic or personal level, the University offers various services through:

- the Academic Skills Unit (http://www.services.unimelb.edu.au/asu/),
- the Disability Liaison Unit (http://www.services.unimelb.edu.au/disability) and

Students and Supervisors should take every opportunity to benefit from the support available to ensure that both research project and coursework components of the MSc(BHS) progress well and that the Melbourne experience is enjoyable and rewarding.
**MSc (BHS) Examination & Assessment Overview**

Assessment and examination processes for the chosen *Discipline subjects and Professional Tools subjects* are managed entirely by the Academic Units (and Coordinators) responsible for each of those subjects. The MSc(BHS) Stream Coordinator does not have a role in any of these assessment processes.

Assessment processes for the *Research Project components* are implemented and handled internally by the Departments or academic unit hosting the student research project – often in parallel with Honours assessment activities, and managed by the local Graduate/Honours Coordinators. Appropriate records relating to the *‘Hurdle’ requirement assessment activities (literature review and oral presentations)* are maintained locally and may be required by the Stream Coordinator. A ‘hurdle’ requirement means that the assessment should be completed at a level which the local Department/Academic Unit considers satisfactory. These tasks need not receive any other grading – but feedback to the student about their skill development is desirable and necessary. If performance is unsatisfactory on an initial attempt, the task may be re-attempted as required to achieve appropriate performance level.

The protocols for the Examination of the *Research Project Report* (approved by Academic Programs Committee) apply, and these Protocols are available from the Melbourne Graduate School of Science (MGSS). An examination proforma is also available and a copy provided below.

In summary, in relation to appointment of examiners and the conduct of examination the following advice (adapted from the MGSS protocols document) applies:

1. At least two examiners must be appointed for all Research Project Reports (and constitute the Examiner panel).
2. All examiners may be internal to The University of Melbourne. External examiners may also be appointed.
3. Department or academic unit Coordinators will provide examiner nominations to the Stream Coordinator.
4. The Stream Coordinator will usually serve as the Chair of Examiners, and will confirm the appointment of the Panel of Examiners.
5. The supervisor may or may not be one of the examiners but this must be consistently applied in the Department or academic unit.
6. If the supervisor is not an examiner the supervisor has the right to raise concern about the marks with the Chair of the Examination Panel (who may then appoint an additional Examiner).
7. When examinations are complete, the Department or academic unit Coordinator advises the Stream Coordinator of the final mark and provides copies of the examiner marks and evaluations to the Stream Coordinator and the Student.
8. When examinations are complete, the Department or academic unit Coordinator provides the Stream Coordinator with digital and hardcopy versions of the Research Project Report for archiving purposes.
9. The Stream Coordinator arranges for the result for the Research Project to be entered into the student's academic record.
# Research Project Report Assessment Process

## Research Project Submission Timelines and Extensions

<table>
<thead>
<tr>
<th>Examiner nomination &amp; approval</th>
<th>At the end of the Semester teaching period, the Supervisor provides the MSc(BHS) Stream Coordinator with the names (and brief statement of relevant expertise &amp; experience) of at least two Examiners who are willing to serve. Stream Coordinator approves examiners (or requests alternatives).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-submission 'Threshold' Assessment documentation</td>
<td>At the end of the Semester teaching period, the Supervisor provides MSc(BHS) Stream Coordinator with records of executed Research Project threshold assessment activities (ie evidence of Literature review, 2 oral presentations).</td>
</tr>
<tr>
<td>Earliest submission date</td>
<td>The Research Project Report can be submitted for examination on the completion of enrolment in the total 125pts of Project Subjects, at the end of the semester teaching period. This would usually be at the end of the 4th semester of the Course, but may occur at the end of the 3rd semester depending on the timing of Project, Discipline and Tools subjects.</td>
</tr>
<tr>
<td>Usual due date</td>
<td>The Research Project Report is due at the end of the examination period for the completing Semester (usually 4 weeks after the end of the teaching period for that Semester, ie 25/11/2011 for Sem 2 2011)</td>
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<tr>
<td>Short extension</td>
<td>As per the University policy for Extensions (UOM0374), extensions can be granted for health or other reasons (equipment failure) for up to two weeks by the supervisor in consultation with the Stream Coordinator.</td>
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<tr>
<td>Longer extension/ Special Consideration</td>
<td>Students who require an extension of longer than two weeks should apply for Special Consideration through the Student Portal. If applicable, such as in the case of equipment failure, the student may request the stream coordinator or supervisor write a letter to accompany their application for Special Consideration. This may be based upon the recommendation of the Department/Academic Unit Examination Committee or Department/Academic Unit Extensions Committee for the student.</td>
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<tr>
<td>Time allowed for Report examination</td>
<td>A 1-2 week period is recommended (and this should be negotiated in advance by host Department with approved examiners).</td>
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<tr>
<td>Timely Course completion (for Graduation)</td>
<td>In the absence of an extension, a timely completion can be achieved to ensure that the Project examination result is available by the Semester final result release date (usually the end of the first week in December for semester 2). Students may then apply for graduation at the first available opportunity.</td>
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<tr>
<td>Timely Course completion (for PhD Admission and Scholarship)</td>
<td>For students who are relying on a Report Examination outcome for course completion to be considered for further academic selection (ie for PhD admission &amp; scholarships) a result should be entered by late November to receive a first round offer. PhD Applications must be lodged 31 October (with result pending).</td>
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Assessment Criteria and Proforma for MSc(BHS) Research Project Report

CANDIDATE: ........................................................................................................................................

TITLE: ...................................................................................................................................................

SUPERVISOR(S): ......................................................................................................................................

Please assess this student’s Report using the criteria listed below. Complete the table by placing ticks in the appropriate boxes. Award an overall grade for the Report based on the distribution of ticks and your judgement of the Report. Provide on a separate sheet your comments explaining the overall grade please. Please grade over the entire range of available marks. Please provide a second version of your report for return to the student that omits the grade but contains suitable feedback.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>H1 (&gt;80)</th>
<th>H2A (75-79)</th>
<th>H2B (70-74)</th>
<th>H3 (65-69)</th>
<th>Pass (50-64)</th>
<th>Fail (&lt;50)</th>
</tr>
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<tbody>
<tr>
<td>1 Explanation of aims of study</td>
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<td>2 Logic and critical thought</td>
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<td>3 Clarity and conciseness</td>
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<td>4 Extent of body of work undertaken</td>
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<td>5 Interpretation of data</td>
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<td>6 Soundness of rationale and methodology</td>
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<td>7 Evaluation and use of literature</td>
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<tr>
<td>8 Implications of findings</td>
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<tr>
<td>9 Presentation</td>
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<tr>
<td>10 Style, grammar and syntax</td>
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Overall grade awarded (%): ................................................................................................................

Examiner Name: .................................................................................................................................

Signature: ............................................................................................................................................

Date: ...................................................................................................................................................

Email: ................................................................................................................................................
Examiner Written Evaluation of MSc(BHS) Research Project Report

The examiner’s evaluation should be up to one page in length. As reports are made available to students, it is recommended that all substantive comments are not written on the Report itself but are noted in the evaluation. Only minor spelling and grammatical errors should be corrected on the Report. Major errors of this type should also be noted in the report. The general tone of comments in the evaluation should be positive, free of intimidation and recognise that the student has given this Report their best effort.

Class H1 (80-100%)

A Report graded as ‘upper H1’ (>85%) is strong in all areas of assessment. Overall the Report shows:

- outstanding command of expression and logical argument in a skilfully structured manuscript;
- superior evaluation and integration of existing literature;
- evidence of significant insight and original thought in dealing with the critical issues;
- sophisticated understanding of research methods, with evidence of careful attention to critical design issues in the execution of the project;
- outstanding presentation and reporting of a body of work;
- thoughtful and appropriate choice of analytical approach (where appropriate) and clear and coherent interpretation of the Report data;
- comprehensive understanding of the importance of the results in the context of the theoretical framework.

A ‘lower H1’ (80-85%) student displays many of the same strengths but is less well-balanced with weakness in some areas.

Overall: An H1 Report (upper or lower) is written by a student obviously capable of undertaking a PhD. Grading over the entire range of 80-100% is essential. The habit has been for examiners to grade between 80-85% for outstanding submissions, with 90% being a rare exception. A grade of 90% and above implies the Report is at the standard expected of an academic/researcher in the field and could be published in an appropriate journal.

Class H2A (75-79%)

A H2A Report shows a good understanding and exposition in most areas although with some notable weaknesses. The Report has most of the following characters:

- the manuscript is well written, logically argued and generally well structured;
- the evaluation and integration of the existing literature is very sound without being outstanding;
- reasonable insight and some evidence of original thought in dealing with the critical issues
- evidence of a solid understanding of research methods;
- adequate design of the research project, although possibly containing minor but retrievable errors;
- choice of data analysis that is appropriate for the design (although less well justified than might be expected of H1 standard), and clear presentation of results;
- generally sound but pedestrian interpretation of results and their relevance to the published literature.

Overall: An H2A Report is written by a student who is capable of undertaking a PhD or MPhil. The report should highlight areas where the work can be improved.
H2B (70-74%)  
A H2B Report has most of the following characteristics:  
• generally competently written, although some problems exist in the logical organisation of the text and expression;  
• provides an adequate coverage of the literature, although it is more descriptive than interpretive, and arguments are often disjointed;  
• occasional evidence of insight into the issues underlying the Report or essay, but little evidence of original thinking;  
• basic but somewhat limited understanding of research methods;  
• the design of the research project is generally adequate but is marred by some errors and oversights;  
• reasonable choice of data analysis, although other approaches may have been more appropriate or powerful;  
• presentation of results lacks clarity;  
• interpretation of results or other studies is adequate but limited.  
Overall: The Report shows an adequate understanding and exposition of relevant issues but there are notable weaknesses in several areas. An H2B Report is written by a student who may be capable of undertaking an MPhil under close supervision.

Class H3 (65-69%) and below  
Theses that are graded at H3 and below have most of the following characteristics:  
• the work is not well written and shows flaws in the structuring of logical arguments;  
• coverage of the literature is weak, with insufficient information provided to support the arguments made, or conclusions drawn;  
• little evidence of insight and ideas are highly derivative;  
• knowledge of research methods is deficient;  
• serious flaws exist in the design of the research project, making it difficult for the research to meet its aims;  
• data analysis techniques are inappropriate;  
• the results are poorly presented;  
• interpretations are superficial, show a weak understanding of the results and their relevance to the theoretical framework.  
Overall: The student shows a poor understanding of the relevant issues and there are major weaknesses throughout the Report. The student has not mastered the higher-order skills required at this level and would not be able to undertake further research.